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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,941	09/08/2005	Arjun G Yodh	UPNA-0034 / P2952	7568
23377 7590 09/14/2010 WOODCOCK WASHBURN LLP CIRA CENTRE, 12TH FLOOR 2929 ARCH STREET PHILADELPHIA, PA 19104-2891				
EXAMINER				
MARTINEZ, BRITTANY M				
ART UNIT		PAPER NUMBER		
1793				
MAIL DATE		DELIVERY MODE		
09/14/2010		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/526,941

**Applicant(s)**

YODH ET AL.

**Examiner**

BRITTANY M. MARTINEZ

**Art Unit**

1793

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 June 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-139 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-139 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/IC)  
Paper No(s)/Mail Date 2/24/2010 and 7/21/2010.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Status of Application*

Acknowledgment is made of Applicants' arguments/remarks and amendment filed June 22, 2010. **Claims 1-139** are pending in the instant application, with **Claims 20, 45, 48, 49, 74, 96, 98, 99, 102, 136 and 137** amended. Upon further consideration of the instant Claims, a restriction requirement was deemed necessary prior to further consideration on the merits. *See below.*

### *Election/Restrictions*

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, Applicants are required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, **Claims 1-54**, drawn to a dispersion comprising an aqueous medium; carbon nanotubes; and at least one surfactant comprising an aromatic group, an alkyl group having from about 4 to about 30 carbon atoms, and a charged head group (**Claims 1-36**) and a method of preparing said dispersion (**Claims 37-54**).

Group II, **Claims 55-57**, drawn to a composition comprising carbon nanotubes; and surfactant comprising an aromatic group, an alkyl group having from about 4 to about 30 carbon atoms, and a charged head group.

Group III, **Claims 58-63**, drawn to a composite comprising a solid matrix; and carbon nanotubes; and surfactant dispersed with said solid matrix, said surfactant comprising an aromatic group, an alkyl group having from about 4 to about 30 carbon atoms, and a head group (**Claims 58-60**) and a method of preparing said composite (**Claims 61-63**).

Group IV, **Claims 64-68**, drawn to an assembly comprising a substrate; and carbon nanotubes and surfactant adjacent to said substrate, said surfactant comprising an aromatic group, an alkyl group having from about 4 to about 30 carbon atoms, and a charged head group (**Claims 64-66**) and a method of preparing said assembly (**Claims 67 and 68**).

Group V, **Claims 69-73**, drawn to solid media for use in detecting chemical and biological substances.

Group VI, **Claims 74-138**, drawn to a method of preparing a nematic nanotube gel.

Group VII, **Claim 139**, drawn to a composition comprising carbon nanotubes, gel precursor, and surfactant, said surfactant comprising an aromatic group, an alkyl group having from about 4 to about 30 carbon atoms, and a charged head group.

## 2. REQUIREMENT FOR UNITY OF INVENTION

As provided in 37 CFR 1.475(a), a national stage application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept ("requirement of unity of invention"). Where a group of inventions is claimed in a national stage application, the requirement of unity of invention shall be fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression "special technical features" shall mean those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art.

The determination whether a group of inventions is so linked as to form a single general inventive concept shall be made without regard to whether the inventions are claimed in separate claims or as alternatives within a single claim. See 37 CFR 1.475(e).

WHEN CLAIMS ARE DIRECTED TO MULTIPLE CATEGORIES OF  
INVENTIONS

As provided in 37 CFR 1.475(b), a national stage application containing claims to different categories of invention will be considered to have unity of invention if the claims are drawn only to one of the following combinations of categories:

(1) A product and a process specially adapted for the manufacture of said product; or

(2) A product and process of use of said product; or

(3) A product, a process specially adapted for the manufacture of the said product, and a use of the said product; or

(4) A process and an apparatus or means specifically designed for carrying out the said process; or

(5) A product, a process specially adapted for the manufacture of the said product, and an apparatus or means specifically designed for carrying out the said process.

Otherwise, unity of invention might not be present. See 37 CFR 1.475(c).

The groups of inventions listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Groups I-VII lack unity of invention because even though the inventions of these groups require the technical feature of carbon nanotubes with surfactant comprising an aromatic group, an alkyl group having from about 6 to about 30 carbon atoms, and a head group, this

technical feature is not a special technical feature as it does not make a contribution over the prior art in view of Blanchet-Fincher et al. (US 7,033,525 B2, US 2004/0065970 A1, and WO 02/080195 A1). Blanchet-Fincher discloses carbon nanotubes and a surfactant comprising dodecylbenzenesulfonic acid (Blanchet-Fincher, US 7,033,525 B2: c. 3, l. 14-36; Example 1; Claims 1-3; US 2004/0065970 A1: 0025-0026; Example 1; Claims 1-4; WO 02/080195 A1: p. 3, l. 6-11 and 35-38; p. 4, l. 1-15 and 29-30; p. 5, l. 14-28; p. 7, l. 15-22; p. 9, l. 15-18; Example 1; Claims 1-4). The prior art date of a reference under 35 U.S.C. 102(e) may be the international filing date if the international application was filed on or after November 29, 2000, designated the United States, and was published by WIPO under (PCT) Article 21(2) in the English language. US 2004/0065970 A1, now patented as US 7,033,525 B2, is a national stage entry of PCT/US02/05486 (published as WO 02/080195 A). WO 02/080195 A was filed after November 29, 2000 (February 12, 2002), designated the United States, and was published by WIPO under (PCT) Article 21(2) in the English language.

Applicants are advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be

presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, Applicants must indicate which of these claims are readable on the elected invention or species.

Should Applicants traverse on the ground that the inventions have unity of invention (37 CFR 1.475(a)), Applicants must provide reasons in support thereof. Applicants may submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. Where such evidence or admission is provided by Applicants, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

3. Applicants are reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

#### ***Response to Amendment***

4. Applicants' amendment filed June 22, 2010, with respect to the Claims has been fully considered and is accepted. The Claim Objections and 35 U.S.C. 112, second paragraph, rejections of the previous Office action have been withdrawn.

5. The Declaration under 37 CFR 1.132 filed June 22, 2010, is sufficient to overcome the rejection of the instant claims based upon Chiang.

***Response to Arguments***

6. Applicants' arguments filed June 22, 2010, with respect to Rohrbaugh and Chiang (Applicants' Response, 6/22/2010, p. 14-18) have been fully considered and are persuasive. With regard to Rohrbaugh, one of ordinary skill in the art would not have been motivated to both a) pick carbon nanotubes as the nanotube of Rohrbaugh and then b) pick the claimed surfactant from the laundry list of surfactants disclosed by Rohrbaugh (Applicants' Response, 6/22/2010, p. 14-15). With regard to Chiang, "the surface chemistry and chemical bonding of C<sub>60</sub> and C<sub>70</sub> is not expected to be the same as that of carbon nanotubes...Hence, one of ordinary skill in the art would not be motivated to look to Chiang's disclosure of combining certain surfactants with C<sub>60</sub> and C<sub>70</sub> or derivatives of C<sub>60</sub> and C<sub>70</sub> to yield any of [the instantly claimed] inventions" (Declaration under 37 CFR 1.132 filed June 22, 2010, p. 2, "5." and Applicants' Response, 6/22/2010, p. 15). The corresponding rejections of the instant Claims have been withdrawn. However, upon further consideration of the instant Claims, a restriction requirement was deemed necessary prior to further consideration on the merits. See above.



***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRITTANY M. MARTINEZ whose telephone number is (571) 270-3586. The examiner can normally be reached on Monday-Friday 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Primary Examiner, Art Unit 1793

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